vascular fractal dimension, two quantitative parameters that reflect microcirculation, with aortic stiffness.

METHODS In this cross-sectional study, we identified the cardiovascular risk factors in 2169 subjects using a health questionnaire, physical examinations and laboratory examinations. We evaluated the aortic stiffness using noninvasive brachial-ankle pulse wave velocity (baPWV) and assessed the microcirculatory alterations with CRAE and retinal vascular fractal dimension, which were measured using fundus photography and semiautomatic quantitative software, respectively.

RESULTS The increase in baPWV (Q1-Q4) correlated with an increased likelihood of the central retinal artery narrowing and a reduction in the retinal vascular fractal dimension. Further adjustment of the cardiovascular risk factors diminished the association between baPWV and CRAE, but increased the association between baPWV and retinal vascular fractal dimension.

CONCLUSIONS Elevated baPWV correlates with reduced CRAE and retinal vascular fractal dimension. Such a finding supports macrocirculation- and microcirculation-associated hypotheses.

GW26-e1391

Activated Effect of β-Estrogen on BKCa in Mesenteric Artery Smooth Muscle Cells of Pre-menopause and Post-menopause Women

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OBJECTIVES Epidemiologic studies indicate that gender differences exist in essential hypertension. Premenopausal women have a much reduced incidence of hypertension compared with age-matched men. However, post-menopausal women develop increased incidence from hypertension. Laboratory researches suggest that estrogen has beneficial cardiovascular effects through their ability to modulate their function; however, these mechanisms remain incompletely understood. So we isolated smooth muscle cells on women mesentery artery using acute enzyme method, recorded large-conductance ca^{2+}-activated potassium channel currents using perforate whole cell patch technique and observed the effect of β-estrogen on BK_{Ca} in mesenteric artery smooth muscle cells of pre-menopause and post-menopause women.

METHODS To apply acute enzyme method to isolate women mesentery artery smooth muscle cells and record large-conductance Ca^{2+}-activated potassium channel currents using perforate whole cell patch technique, and to examine the effects of β-E_2 on BK_{Ca} of women mesenteric artery vascular smooth muscle cells (VSMCs) of pre-menopause women non-hypertension group (PNH), post-menopause women non-hypertension group (NH) and post- menopause women essential hypertension group (EH), and to explore the relation amongβ-E_2, BK_{Ca} and women essential hypertension, and to identify that the mechanisms of effect ofβ-E_2 on pre-menopause and post-menopause women essential hypertension.

RESULTS (1) Comparisons of effects of estrogen on BK_{Ca} macroscopic currents between PNH, NH and EH groups:①At +60 mV, the current densities of BK_{Ca} of PNH group increased 0.97±0.40 times after adding 100 μMβ-E_2.②At +60 mV, the current densities of BK_{Ca} of NH group increased 0.75±0.47 times after adding 100 μMβ-E_2.③At +60 mV, the current densities of BK_{Ca} of EH group increased 0.60±0.33 times after adding 100 μMβ-E_2. (2) Effects of ICI 182780 on BK_{Ca} of women mesenteric artery smooth muscle cells. At +60mV, the current densities of BK_{Ca} of women mesenteric artery smooth muscle cells could increase from15.89 ±4.87 pA/pF to 27.88 ±6.75 pA/pF($P<0.01$, $n=23$). There was inhibitory effect on BK_{Ca} after adding ICI 182780 subsequently. The current densities of BK_{Ca} of women mesenteric artery smooth muscle cells could decrease to 20.15±6.21 pA/pF ($P<0.05$, $n=23$).

CONCLUSIONS (1)β-E_2 could activate BK_{Ca} macroscopic currents on PNH group, NH group, EH group. Compared with PNH group, the effect of estrogen on BK_{Ca} in NH was lower. That suggest thatβ-E_2 play an important role in pre-menopause women' heart protection. Compared with NH group, the effect of estrogen on BK_{Ca} in EH was lower. These data suggest that the responsiveness of effect of estrogen was lower on blood vessel after hypertension and menopause was a factor of happening of hypertension; (2) β-E_2 could make women mesenteric artery relax, and the effect could partly be inhibited by ICI 182780, so BK_{Ca} and ER were involved mainly in the mechanisms of E-induced relaxation in mesenteric artery.

GW26-e1402

Association of G-protein beta3 subunit gene C825T polymorphism with cardiovascular events in Chinese hypertensive patients

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OBJECTIVES The beta-3 subunit of heterotrimeric Guanine-binding protein (G-protein) encoded by gene GNB3 is crucial for cell signal transmitting and a C825T polymorphism in exon 10 of this gene is associated with increased intracellular signal transduction. Several recent studies conducted in normal population showed that GNB3 gene C825T polymorphism is related to cardiovascular diseases (CVD). However, it is unclear whether 825T allele influences the incidence of CVD in patients with hypertension.

METHODS In current study, 695 patients with essential hypertension were genotyped for C825T polymorphism of GNB3 gene and followed up for 8 years to detect major adverse cardiac and cerebrovascular events (MACCEs) which include new onset of stroke, the onset of CVD and death. Established cardiovascular risk factors were used to adjust the multivariate Cox analysis for confounders.

RESULTS After a mean follow-up period of 7.60±1.12 years, CVD was observed in 15 patients of the TT genotype group, 33 of the CC genotype group and 21 of the CT group genotype group (17.9% vs. 9.9% vs. 7.5%; P=0.021). The time-to-event analysis using the Kaplan-Meier method showed a significantly higher incidence of MACCEs in the TT genotype group than those of the other genotypes (log rank P=0.03 and P<0.0001 for among the three genotypes and between the CC+ CT vs. TT genotypes respectively). In Cox analysis, the GNB3 gene 825TT variant was significantly and independently predictive of MACCEs (relative risk=2.579; P<0.0001), CVD (relative risk=2.983; P<0.0001), but not stroke (P=0.378), CVD, stroke (P=0.378) and death (P=0.827) after adjustment for age, Body Mass Index (BMI), presence or absence of diabetes mellitus, presence or absence of dyslipidemia and current smoking.

CONCLUSIONS The GNB3 825 TT genotype may be a risk factor for CVD independent of other established cardiovascular risk factors in patients with essential hypertension. Further studies are needed to clarify the nature and pathways of this association.

GW26-e2433

Prevalence of Liddle syndrome among young hypertension patients of undetermined cause in a Chinese population

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OBJECTIVES Liddle syndrome, an autosomal dominant form of monogenic hypertension, has been regarded as a rare disorder, which leads to many Liddle syndrome patients being misdiagnosed and suffering from severe complications at an early age. Little is known about the prevalence of Liddle syndrome. Therefore, we aimed to investigate the prevalence of Liddle syndrome confirmed by genetic testing among young hypertension patients of undetermined causes in China.

METHODS Three hundred and thirty hypertensive patients of undetermined causes aged 14-40 years who were referred to our hypertension center between January 2010 and December 2014 were enrolled. All patients had their medical histories inquired, blood pressure measured, and blood biochemistry indices analyzed. Patients with hypokalemia (<3.5 mmol/L) underwent genetic testing of the 13th exon of genes encoding β and γ subunits of the epithelial sodium channel (ENaC). Diagnosis was established by identification of mutations that destroy the PY motif of ENaC, and then all family members of the index patient with Liddle syndrome underwent genetic testing and clinical examination.

RESULTS Among the 330 patients, hypokalemia was found in 48 (14.5%). Of these 48, 5 were diagnosed as Liddle syndrome, yielding a prevalence of 1.52%, besides, 12 of their relatives were identified as well. These Liddle's patients presented with an earlier onset of hypertension, a stronger family history of hypertension and higher blood pressure than those with essential hypertension. And all these Liddle's patients had hypokalemia and suppressed plasma renin activity.